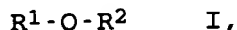


We claim:

1. A process for preparing highly reactive polyisobutenes having
5 a terminal vinylidene group content of more than 80 mol% and
an average molecular weight of from 500 to 5000 dalton by
cationic polymerization of isobutene in the liquid phase in
the presence of a complex comprising boron trifluoride at
10 from +40°C to -60°C, which comprises polymerizing in the
presence of a complex comprising boron trifluoride and
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15 a) a primary alcohol having 1-20 carbon atoms or a secondary
alcohol having 3-20 carbon atoms, or a mixture of these
alcohols, and
- b) an ether containing no tertiary alkyl groups and having
the formula I
- 20
$$R^1-O-R^2 \quad I,$$
- where R^1 and R^2 are primary or secondary alkyl groups
having 3-10 carbon atoms, with the proviso that at least
one of R^1 and R^2 is a secondary alkyl group.
- 25 2. A process as claimed in claim 1, wherein the secondary
alcohol a) used is isopropyl alcohol and/or 2-butanol.
3. A process as claimed in claim 1, wherein the ether b) used is
diisopropyl ether, di-sec-butyl ether and/or isopropyl
30 sec-butyl ether.
4. A process as claimed in claim 1, wherein the primary and/or
secondary alcohol a) and the ether b) are used in a molar
ratio of from 0.01:1 to 10:1.
- 35 5. A process as claimed in claim 1, wherein the primary and/or
secondary alcohol a) and the ether b) are used in a molar
ratio of from 0.02:1 to 2:1.
- 40 6. A process as claimed in claim 1, wherein boron trifluoride,
primary and/or secondary alcohol and ether are combined in
the polymerization reactor to generate the complex in situ in
the polymerization mixture.
- 45 7. A process as claimed in claim 1, wherein the boron
trifluoride/ether complex is preformulated and is introduced,
together with the primary and/or secondary alcohol or

separately, into the solvent or monomer feed to the reactor or directly into the reactor.

8. A process as claimed in claim 1, wherein polyisobutenes having a terminal vinylidene group content of more than 90 mol% are polymerized at an isobutene conversion of up to 95% using a preformed boron trifluoride/isopropanol/diisopropyl ether complex, a molar secondary alcohol/ether ratio of from 2:1 to 1:5 and a boron trifluoride/diisopropyl ether ratio of from 0.6:1 to 0.9:1.
9. A process as claimed in claim 1, wherein the isobutene source is a C₄ cut comprising isobutene in an amount of at least 6% by weight.
10. A polyisobutene having an average molecular weight of from 500 to 5000 dalton and a terminal vinylidene group content of more than 90%, obtainable by cationic polymerization of isobutene in the liquid phase with the aid of boron trifluoride as catalyst at from 40 to -60°C in the presence of a boron trifluoride complex with
- a) a primary alcohol having 1-20 carbon atoms or a secondary alcohol having 3-20 carbon atoms, or a mixture of these alcohols, and
- b) an ether containing no tertiary alkyl groups and having the formula I



where R¹ and R² are primary or secondary alkyl groups having 3-10 carbon atoms, with the proviso that at least one of the radicals R¹ and R² is a secondary alkyl group.

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